Claims:

1. A recombinant nucleic acid encoding a CAB domain, comprising a portion of calcineurin A and a portion of calcineurin B, wherein the CAB domain forms a tripartite complex with an FKBP/CAB ligand and an FKBP domain.

2. The recombinant nucleic acid of claim 1 wherein the calcineurin A portion of the CAB domain comprises a peptide sequence selected from any of the following peptide sequences: residues 12-394 of human calcineurin A, residues 12-370 of human calcineurin A or residues 340-394 of human calcineurin A.

3. The recombinant nucleic acid of claim 1 wherein the calcineurin B portion of the CAB domain comprises residues 3-170 of human calcineurin B.

4. The recombinant nucleic acid of claim 1, 2 or 3 comprising a nucleic acid sequence encoding a calcineurin A and/or calcineurin B peptide sequence which differs from a naturally occurring calcineurin peptide sequence by up to ten amino acid substitutions, deletions or insertions.

5. A recombinant nucleic acid encoding a fusion protein comprising at least one CAB domain of claim 1 and at least one additional domain that is heterologous thereto.

6. The recombinant nucleic acid of claim 5 wherein the heterologous domain is selected from the group comprising a DNA binding domain, a transcription regulatory domain, a cellular localizing domain and a signaling domain.

7. The recombinant nucleic acid of claim 6 wherein the heterologous domain is or is derived from a lexA, GAL4 or composite DNA binding domain.

8. The recombinant nucleic acid of claim 6 wherein the heterologous domain is or is derived from a p65, VP16 or AP domain.

9. The recombinant nucleic acid of claim 6 wherein the heterologous domain is or is derived from a KRAB domain or a ssn-6/TUP-1 domain.

10. The recombinant nucleic acid of claim 6 wherein the heterologous domain is or is derived from an intracellular domain of a cell surface receptor.

11. A recombinant nucleic acid encoding a fusion protein containing one or more CAB domains which form a tripartite complex with an FKBP domain-containing protein and a non-naturally occurring FKBP/CAB ligand preferentially over FK506.

12. A nucleic acid composition, comprising a first recombinant nucleic acid of any of claims 5-11 and a second recombinant nucleic acid encoding a fusion protein comprising at least one FKBP domain and at least one additional domain that is heterologous thereto.

13. A nucleic acid composition of claim 12 wherein the second nucleic acid encodes a fusion protein containing a heterologous domain that is the same or different from the heterologous domain on the first fusion protein.

14. The nucleic acid composition of claim 13 wherein the first fusion protein comprises a CAB domain and a transcription activation domain and the second fusion protein comprises an FKBP domain and a DNA binding domain.

15. The nucleic acid composition of claim 13 wherein the first fusion protein comprises a CAB domain and a DNA binding domain and the second fusion protein comprises an FKBP domain and a transcription activation domain.

16. A nucleic acid composition of claim 12 wherein the first and second fusion proteins form a ligand dependent complex in the presence of ligand, and wherein the complex initiates a detectable biological signal.

17. The nucleic acid composition of claim 16 wherein the biological signal is selected from the group comprising transcription, cell proliferation, cell differentiation, apoptosis.

18. The nucleic acid composition of claim 12 wherein the composition further comprises a target gene construct.

19. A fusion protein encoded by the recombinant nucleic acid of any of claims 5-11.

20. A vector comprising a recombinant nucleic acid of any of claims 1-3 or 5-11.

21. A vector comprising a recombinant nucleic acid of claim 4.

22. A vector comprising a nucleic acid composition of claim 12.

23. The vector of claim 20 wherein the vector is a viral vector.

24. The vector of claim 22 wherein the vector is a viral vector.

25. The vector of claim 23 or 24 wherein the viral vector is selected from the group consisting of adenovirus, AAV, herpesvirus, retrovirus, hybrid adenovirus/AAV, poxvirus, lentivirus.

26. A host cell comprising a recombinant nucleic acid of any of claims 1-3 or 5-11.

27. A host cell comprising a nucleic acid composition of claim 12.

28. A host cell cell of claim 26 which is of ~~human origin~~.

29. A host cell cell of claim 27 which is of human origin.

30. A host cell of claim 26 which is encapsulated within a biocompatible material.

31. A host cell of claim 27 which is encapsulated within a biocompatible material.

32. A non-human animal containing host cells of claim 26.

33. A non-human animal containing host cells of claim 27.

34. A method for producing genetically engineered host cells comprising introducing into the cells a recombinant nucleic acid of any of claims 1-3 or 5-11 under conditions permitting DNA uptake by cells.

35. A method for producing genetically engineered host cells comprising introducing into the cells the nucleic acid compositions of any of claims 12-18 under conditions permitting DNA uptake by cells.

36. The method of claim 34 wherein the nucleic acids are introduced ex vivo.

37. The method of claim 35 wherein the nucleic acids are introduced ex vivo.

38. The method of claim 34 wherein the cells are present within an organism.

39. The method of claim 35 wherein the cells are present within an organism.

40. A method for multimerizing fusion proteins in the cell of claim 27 which comprises contacting the cells with an effective amount of a ligand under conditions permitting it to form a complex with the fusion proteins.

41. A method for initiating a detectable biological signal in cells of claim 27 which comprises contacting the cells with a ligand capable of forming a complex with the fusion proteins, in an effective amount permitting gene expression.

42. A method of claim 40 or 41 wherein the cells are grown in a culture medium and the contacting is effected by adding the ligand to the culture medium.

43. A method of claim 40 or 41 wherein the cells are present within a host organism and the contacting is effected by administering the ligand to the host organism.

44. A method of claim 43 wherein the host organism is a mammal and the ligand is administered by oral, bucal, sublingual, transdermal, subcutaneous, intramuscular, intravenous, intra-joint or inhalation administration in an appropriate vehicle therefor.

45. A method for providing animal cells responsive to a ligand which comprises introducing into host animal cells a nucleic acid composition of any of claims 12-18.

46. A kit which comprises the nucleic acid composition of any of claims 12-18 with an appropriate package insert.

47. A kit of claim 46 which further comprises a ligand capable of forming a complex with the fusion proteins.

48. A kit of claim 47 which further comprises a multimerization antagonist.

49. A kit of claim 46 in which one or more of the DNA constructs contains a cloning site in place of a heterologous domain.

50. A kit of claim 46 in which the target gene construct contains a cloning site in place of a target gene.